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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

| | | |
|--|----|---|
| (51) International Patent Classification ⁶ : C12N 15/82, 15/10, C12P 21/02 | A1 | (11) International Publication Number: WO 98/31823 (43) International Publication Date: 23 July 1998 (23.07.98) |
|--|----|---|

(21) International Application Number: PCT/US98/00840

(22) International Filing Date: 16 January 1998 (16.01.98)

(30) Priority Data:

| | | |
|------------|-----------------------------|----|
| 60/035,955 | 17 January 1997 (17.01.97) | US |
| 60/069,400 | 12 December 1997 (12.12.97) | US |

(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Applications

| | |
|----------|-----------------------------|
| US | 60/035,955 (CIP) |
| Filed on | 17 January 1997 (17.01.97) |
| US | 60/069,400 (CIP) |
| Filed on | 12 December 1997 (12.12.97) |

(71) Applicant (for all designated States except US): THE SCRIPPS RESEARCH INSTITUTE [US/US]; 10550 North Torrey Pines Road, La Jolla, CA 92037 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): MAYFIELD, Stephen [US/US]; 1238 Sea Village Drive, Cardiff, CA 92007 (US).

(74) Agents: HOLMES, Emily et al.; The Scripps Research Institute, 10550 North Torrey Pines Road, TPC-8, La Jolla, CA 92037 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published*With international search report.**Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: RNA BINDING PROTEIN AND BINDING SITE USEFUL FOR EXPRESSION OF RECOMBINANT MOLECULES

(57) Abstract

The present invention relates to a gene expression system in eukaryotic and prokaryotic cells, preferably plant cells and intact plants. In particular, the invention relates to an expression system having a RB47 binding site upstream of a translation initiation site for regulation of translation mediated by binding of RB47 protein, a member of the poly(A) binding protein family. Regulation is further effected by RB60, a protein disulfide isomerase. The expression system is capable of functioning in the nucleus/cytoplasm of cells and in the chloroplast of plants. Translational regulation of a desired molecule is enhanced approximately 100 fold over that obtained without RB47 binding site activation.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|---|---|---|
| Applicant's or agent's file reference 578.2PC | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/US98/00840 | International filing date (day/month/year) 16 JANUARY 1998 | Priority date (day/month/year) 17 JANUARY 1997 |
| International Patent Classification (IPC) or national classification and IPC IPC(6): C12N 15/82, 5/10; C12P 21/02 and US Cl.: 435/69.1, 320.1, 325, 410; 530/350 | | |
| Applicant THE SCRIPPS RESEARCH INSTITUTE | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets.
- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 33 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

| | |
|--|--|
| Date of submission of the demand 17 AUGUST 1998 | Date of completion of this report 15 OCTOBER 1998 |
| Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 | Authorized officer JAMES KETTER |
| Facsimile No. (703) 305-3230 | Telephone No. (703) 308-0196 |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US98/00840

I. Basis of the report

1. This report has been drawn on the basis of *(Substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments):*

☐ the international application as originally filed.

☒ the description, pages (See Attached), as originally filed.

pages _____, filed with the demand.

pages _____, filed with the letter of _____.

pages _____, filed with the letter of _____.

☒ the claims, Nos. (See Attached), as originally filed.

Nos. _____, as amended under Article 19.

Nos. _____, filed with the demand.

Nos. _____, filed with the letter of _____.

Nos. _____, filed with the letter of _____.

☒ the drawings, sheets/fig (See Attached), as originally filed.

sheets/fig _____, filed with the demand.

sheets/fig _____, filed with the letter of _____.

sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

☒ the description, pages NONE.

☒ the claims, Nos. NONE.

☒ the drawings, sheets/fig NONE.

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the ~~Supplemental Box~~ Additional observations below (Rule 70.2(c)).

4. Additional observations, if necessary:

NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US98/00840

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. STATEMENT**

Novelty (N)

Claims 1-65 YESClaims NONE NO

Inventive Step (IS)

Claims 1-65 YESClaims NONE NO

Industrial Applicability (IA)

Claims 1-65 YESClaims NONE NO**2. CITATIONS AND EXPLANATIONS**

Claims 1-65 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest the claimed vectors, nucleic acids or recombinant proteins.

_____ NEW CITATIONS _____
NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US98/00840

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

I. BASIS OF REPORT:

This report has been drawn on the basis of the description,
pages, 1-8 and 11-58, as originally filed.
pages, 9, 10 and 59-80, filed with the demand.
and additional amendments:
NONE

This report has been drawn on the basis of the claims,
numbers, NONE, as originally filed.
numbers, NONE, as amended under Article 19.
numbers, 1-65, filed with the demand.
and additional amendments:
NONE

This report has been drawn on the basis of the drawings,
sheets, 1-17, as originally filed.
sheets, NONE, filed with the demand.
and additional amendments:
NONE

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

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in its capacity as elected Office

| | |
|---|---|
| Date of mailing (day/month/year) 24 September 1998 (24.09.98) | |
| International application No. PCT/US98/00840 | Applicant's or agent's file reference 578.2PC |
| International filing date (day/month/year) 16 January 1998 (16.01.98) | Priority date (day/month/year) 17 January 1997 (17.01.97) |
| Applicant MAYFIELD, Stephen | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
17 August 1998 (17.08.98)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Jean-Marie McAdams

Telephone No.: (41-22) 338.83.38

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/00840

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : C12N 15/82, 5/10; C12P 21/02

US CL : 435/69.1, 320.1, 325, 410; 530/350

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/69.1, 320.1, 325, 410; 530/350

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| X | YOHN. C.B. Altered mRNA Binding Activity and Decreased Translation Initiation in a Nuclear Mutant Lacking Translation of the Chloroplast psbA mRNA. Molecular and Cellular Biology. July 1996. Vol. 16. No. 7. pages 3560-3566, especially Figure 9. | 10,11 |

☐

Further documents are listed in the continuation of Box C.

☐

See patent family annex.

| | |
|---|--|
| * Special categories of cited documents: | *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| *A* document defining the general state of the art which is not considered to be of particular relevance | *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
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| *P* document published prior to the international filing date but later than the priority date claimed | |

Date of the actual completion of the international search

23 APRIL 1998

Date of mailing of the international search report

23 JUN 1998

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

JAMES KETTER

Telephone No. (703) 308-0196